PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):

Paul Martin et al.

Title:

SHARED SYNCHRONIZED SKIP-LIST DATA STRUCTURE AND

TECHNIQUE EMPLOYING LINEARIZABLE OPERATIONS

Application No.: 10/653,828

Filed:

September 3, 2003

Examiner:

Unknown

Group Art Unit:

2157

Atty. Docket No.: 004-7982

Confirmation No.:

4116

December 28, 2005

Mail Stop Amendment **COMMISSIONER FOR PATENTS** P.O. Box 1450 Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT 37 C.F.R. § 1.97(b)

Dear Sir:

Pursuant to 37 C.F.R. § 1.56, § 1.97 and § 1.98, the undersigned brings to the Examiner's attention in the above-identified application the patents, publications, applications or other information identified in the attached:

| | Form(s) PTO/SB/08A (N/A page(s), with copy of no reference(s)). |
|-------------|--|
| \boxtimes | Form(s) PTO/SB/08B (2 page(s), with copy of 17 reference(s)). |
| | Listing of Pending Applications (N/A page(s), with copy of no application(s)). |
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Citation of such information shall not be construed as (i) an admission that the information necessarily is, or corresponds to, prior art with respect to the instant invention, (ii) a representation that a search has been made, other than as described herein, or (iii) an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

For each item of information listed that is not in the English language, the undersigned has provided a concise explanation of the relevance through (i) an English language abstract, (ii) an English language equivalent application, or (iii) if cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action that indicates the degree of relevance found by the foreign office.

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Agent for Applicant(s) (512) 338-6321 (direct)

(512) 338-6300 (main)

(512) 338-6301 (fax)

| PTO/SB/08B (Substitute for form 1449/PTO) | Attorney Docket No.: | 004-7982 |
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| | Application No.: | 10/653,828 |
| O \ P FINFORMATION DISCLOSURE STATEMENT BY APPLICANT | First Named Inventor: | Paul Martin et al. |
| 8 | Filing Date: | September 3, 2003 |
| JAN 0 3 2006 | Group Art Unit: | 2157 |
| MADEMAN | Examiner Name: | Unknown |
| Sheet 1 of 2 | Date Submitted: | December 28, 2005 |

| | | NON PATENT LITERATURE DOCUMENTS | | | | |
|---|---|---|--|--|--|--|
| Examiner Initials* | Cite No. ¹ | (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | | | | |
| | 1 | HERLIHY, M.P., et al., "Linearizability: A Correctness Condition For Con-Current Objects," ACM Transactions On Programming Languages and Systems, 12(3):463–492, July 1990. | | | | |
| HERLIHY, M.P., "Wait-Free Synchronization," ACM Transactions On Programming Languages and System 11(1):124–149, January 1991. | | | | | | |
| | 3 | MASSALIN, H., et al., "A Lock-Free Multiprocessor OS Kernel," Technical Report TR CUCS-005-9, Columbia University, New York, NY, 1991, 21 pages. | | | | |
| | 4 | MASSALIN, Henry, "Synthesis: An Efficient Implementation of Fundamental Operating System Services," Dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy in the Graduate School of Arts and Sciences, Columbia University, New York, NY, online, 158 pages, 1992 [retrieved from the Internet on 2001-07-13: URL:ftp://ftp.cs.columbia.edu/reports/reports-1992/cucs-039-92.ps.gz]. | | | | |
| | 5 | BERSHAD, B. N., "Practical Considerations For Non-Blocking Concurrent Objects," <i>Proceedings 13th IEEE International Conference on Distributed Computing Systems</i> , pp. 264–273. IEEE Computer Society Press, Washington, D.C., 1993. | | | | |
| | 6 | HERLIHY, M., "A Methodology For Implementing Highly Concurrent Data Objects," ACM Transactions on Programming Languages and Systems, 15(5):745–770, November 1993. | | | | |
| | 7 | ATTIYA, Hagit, et al., "Are Wait-Free Algorithms Fast?" Journal of the ACM, 41(4):725–763, July 1994. | | | | |
| | 8 | LAMARCA, A., "A performance evaluation of lock-free synchronization protocols," <i>Proceedings of the 13th Annual ACM Symposium on Principles of Distributed Computing</i> , pp. 130–140, ACM Press, New York, NY, 1994. | | | | |
| | 9 | MICHAEL, Maged M. et al., "Simple, Fast, and Practical Non-Blocking and Blocking Concurrent Queue Algorithms," Proceedings of PODC, pp. 267-275, May 1996. | | | | |
| | 10 | ATTIYA, H., et al., "Universal Operations: Unary versus Binary," Proceedings of the 15th Annual ACM Symposium on Principles of Distributed Computing, pp. 223-232, ACM Press, New York, NY, 1996. | | | | |
| GREENWALD, M. B., et al., "The Synergy Between Non-Blocking Synchronization And Operating System Structure," <i>Proceedings of the 2nd Symposium on Operating Systems Design and Implementation</i> , pp. 123-Usenix Association, Berkeley, CA, 1996. | | | | | | |
| AFEK, Y., et al., "Disentangling Multi-Object Operations," Proceedings of the 16th Annual ACM Symposism Principles of Distributed Computing, pp. 111–120, August 1997. Santa Barbara, CA. | | | | | | |
| | ARORA, N. S., et al., "Thread Scheduling For Multiprogrammed Multiprocessors," <i>Proceedings of the 10th Annual ACM Symposium on Parallel Algorithms and Architectures</i> , pp. 119-129, ACM Press, New York, NY, 1998. | | | | | |
| ATTIYA, Hagit, et al., "Atomic Snapshots In O(n log n) Operations," SIAM Journal on Computing, 2 340, April 1998. | | | | | | |
| | 15 | GREENWALD, M., "Non-Blocking Synchronization and System Design," PhD thesis, Stanford University Technical Report STAN-CS-TR-99-1624, Palo Alto, CA, August 1999, 241 pages. | | | | |
| xaminer Sig | nature | Date Considered | | | | |

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional).

Applicant is to place a check mark here if English language Translation is attached.

| PTO/SB/08B (Substitute for form 1449/PTO) | Attorney Docket No.: | 004-7982 | |
|---|--|-------------------|--|
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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | First Named Inventor: Paul Martin et al. | | |
| (Continuation Sheet) | Filing Date: | September 3, 2003 | |
| | Group Art Unit: | 2157 | |
| | Examiner Name: | Unknown | |
| Sheet 2 of 2 | Date Submitted: | December 28, 2005 | |

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| Examiner Initials* | Cite No.1 | Include name of author (in CAPITAL LETTERS), title of article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² | |
| | 16 | AGESEN, Ole, et al.: "DCAS-BASED CONCURRENT DEQUES," SPAA 2000. Proceedings of the 12th Annual ACM Symposium on Parallel Algorithms and Architectures, pp. 137 146, ACM Press, New York, NY, ISBN: 1-58113-185-2, 2000. | | |
| | 17 | DETLEFS, David L., et al., "Even Better DCAS-Based Concurrent Deques," <i>Lecture Notes in Computer Science</i> , vol. 1914, pp. 59-73, Springer-Verlag, Berlin, Germany, ISBN: 3-540-41143-7, 2000. | | |
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